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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,697	04/30/2001	Byung-In Ma	1293.1204	9532

21171 7590 02/26/2004

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EXAMINER	
ORTIZ CRIADO, JORGE L	
ART UNIT	**PAPER NUMBER**
2655	9

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/844,697	MA ET AL.	
	Examiner	Art Unit	
	Jorge L Ortiz-Criado	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) *2,6 and 9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 5, 8, 11-13, 16, 17, 19, 20, 22-25, 27-39, 41, 42 and 44-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) *3,4,7,10,14,15,18,21,26,40 and 43* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 April 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/26/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's provisional election of Species (b), Fig. 6, claims 1, 2, 5, 6, 8, 9, 11-13, 16, 17, 19, 20, 22-25, 27-39, 41, 42 and 44-46, in Paper No. 8 is acknowledged.

2. Claims 2, 6 and 9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 8.

Applicant's asserts that depending claims 1, 8, 11, 12, 19, 22-34, 27-35, 36 and 44 are generic to Species A through F.

In reviewing the claims, its s believed that claims 1, 12, 19, 22-23, 28-34 and 35 are generic claims to Species A through F.

But claims 8,11, 24,27 and 36 are not generic to Species A through F because claims 8, 11, 24, 27 and 36 are limited to detect tracking and tilt by phase comparison and then subtracting the phase comparison signals as in Species A-C. In Species D-F additional signals are summed and the phase compared.

Applicant's election with traverse of Species (b), Fig. 6, claims 1, 2, 5, 6, 8, 9, 11-13, 16, 17, 19, 20, 22-25, 27-39, 41, 42 and 44-46, in Paper No. 9 is acknowledged.

The traversal is on the ground(s) that:

(a) The Examiner's action is not in compliant with the requirements of 35 U.S.C. § 121, which requires an identification of claims that fall into particular groups.

This is not found persuasive because se as provided in MPEP § 809.02 (a)(B) reproduced below:

> *Clearly identify each (or in aggravated cases at least exemplary ones) of the disclosed species, to which claims are restricted. The species are preferably identified as the species of figures 1, 2, and 3 or the species of examples I, II, and III, respectively. In the absence of distinct figures or examples to identify the several species, the mechanical means, the particular material, or other distinguishing characteristic of the species should be stated for each species identified. If the species cannot be conveniently identified, the claims may be grouped in accordance with the species to which they are restricted.*

The Examiner clearly identifies in the Office Action the distinct species of the claimed the invention and supporting such finding by providing figures that clearly and conveniently identify the distinct species of the invention.

(b) The search and examination of the entire application would not place a serious burden on the Examiner and specifically the Examiner has not provided evidence that the existence of the species represents unreasonable number to be searched.

This is not found persuasive because as provided in MPEP § 808.01 Species:

-- Where there is no disclosure of relationship between species (see MPEP § 806.04(b)),

they are independent inventions and election of one invention following a requirement for restriction is mandatory even though applicant disagrees with the examiner. There must be a patentable difference between the species as claimed. See MPEP § 806.04(h). Since the claims are directed to independent inventions, restriction is proper pursuant to 35 U.S.C. 121, and it is not necessary to show a separate status in the art or separate classification.

A single disclosed species must be elected as a prerequisite to applying the provisions of 37 CFR 1.141 to additional species if a generic claim is allowed. --

Accordingly, it is not required to show a separate status in the art or separate classification. The Examiner clearly identifies in the Office Action the distinct species of the claimed the invention and supporting such finding by providing figures that clearly and conveniently identify the distinct species of the invention as provided in MPEP § 809.02 (a)

The requirement is still deemed proper and is therefore made FINAL.

Drawings

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 5, 8, 11-13, 16, 17, 19, 20, 22-25, 27-39, 41, 42 and 44-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Ma et al. U.S. Patent No. 6,507,544.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Ma et al. discloses an error signal detection method for an optical recording/reproducing system (See Abstract), the method comprising:

(a) detecting a light incident through an objective lens after having been reflected and diffracted from a recording medium, as eight light portions arranged in a 2 x 4 matrix, including four inner light portions, and four outer light portions around corresponding inner light portions,

wherein a row and a column of the matrix are parallel to a tangential and a radial direction of the recording medium, respectively (See col. 8, lines21-45; Fig. 4,5, 18) ;

(b) calculating a first sum signal by summing a detection signal from one of the outer light portions located in a first diagonal direction (See col. 15, lines 37-64; "a1"; Fig. 18), and

a detection signal from one of the inner light portions located in a second diagonal direction (See col. 15, lines 37-64; "a2"; Fig. 18);

(c) calculating a second sum signal by summing a detection signal from one of the inner light portions located in the first diagonal direction (See col. 15, lines 37-64; "b2"; Fig. 18), and

a detection signal from one of the outer light portions located in the second diagonal direction (See col. 15, lines 37-64; "b1"; Fig. 18);

(d) comparing phases of the first and second sum signals and outputting a phase comparison signal (See col. 15, lines 37-64; Fig. 18, ref # 457), and

detecting a tilt error signal from the phase comparison signal. (See col. 15, lines 59-64; Figs. 17,18)

Regarding claim 5, Ma et al. discloses amplifying the detection signals from the inner light portions by a predetermined gain factor before summation with the detection signals from the outer light portions (See col. 15, lines 37-64; Fig. 18; ref # 456a, 456b)

Regarding claim 8, Ma et al. discloses e) comparing a phase of a third sum signal of the detection signals from the inner and the outer light portions located in the first diagonal direction with a phase of a fourth sum signal of the detection signals from the inner and the outer light

portions located in the second diagonal direction, to detect a tracking error signal; and (f) subtracting the tracking error signal from the tilt error signal, so that a detrack component is eliminated from the tilt error signal. (See col. 14, line 66 to col. 15, line 64; Figs 17,18)

Regarding claim 11, Ma et al. discloses (f) further comprises amplifying the tilt error signal detected in step (d) or the tracking error signal detected in step (e) by a predetermined gain factor (See col. 15, lines 23-36)

Regarding claim 12, Ma et al. discloses an error signal detection apparatus for an optical recording/reproducing system (See Abstract), comprising:

a photodetector to receive light incident from an objective lens after having been reflected and diffracted from a recording medium; and a signal processor to detect an error signal by processing detection signals from the photodetector, wherein the photodetector includes four inner and four outer sections arranged in a 2 x 4 matrix, to independently receive and photoelectrically convert the light incident from the objective lens, pairs of the inner and outer sections being arranged in radial direction of the recording medium, wherein a row and a column of the matrix are parallel to the radial and a tangential direction of the recording medium, respectively (See col. 8, lines21-45; Fig. 4,5, 18); and

the signal processor compares a phase of a sum of detection signals from one of the outer sections located in a first diagonal direction and from one of the inner sections located in a second diagonal direction (See col. 15, lines 37-64; "a1, a2"; Fig. 18),

with a phase of a sum of detection signals from one of the outer sections arranged in the second diagonal direction and from an inner section arranged in the first diagonal direction (See col. 15, lines 37-64; "b1, b2"; Fig. 18),

to output a phase comparison signal, and the signal processor detects a tilt error signal from the phase comparison signal (See col. 15, lines 59-64; Figs. 17,18)

Regarding claim 13, Ma et al. discloses wherein the signal processor comprises:

a first phase comparator to receive a sum signal of detection signals from the one of the outer sections located in the first diagonal direction and from the one of the inner sections located in the second diagonal direction (See col. 15, lines 37-64; "a1,a2"; Fig. 18, ref # 457), and

a sum signal of detection signals from one of the outer sections located in the second diagonal direction in a same row as the one of the outer sections in the first diagonal direction and from one of the inner sections located in the first diagonal direction (See col. 15, lines 37-64; "b1,b2"; Fig. 18),

comparing phases of the received two sum signals, and outputting a first comparator phase comparison signal (See col. 15, lines 37-64; Fig. 18, ref # 457) ;

a second phase comparator to receive a sum signal of detection signals from another one of the outer sections located in the first diagonal direction and from another one of the inner sections located in the second diagonal direction (See col. 15, lines 37-64; "c1,c2"; Fig. 18, ref # 459) , and

a sum signal of detection signals from one of the outer sections located in the second diagonal direction in a same row as the another one of the outer sections in the first diagonal direction and from the other one of the inner sections located in the first diagonal direction (See col. 15, lines 37-64; "d1,d2"; Fig. 18),

comparing phases of the received two sum signals, and outputting a second comparator phase comparison signal (See col. 15, lines 37-64; Fig. 18, ref # 459); and

an adder to sum the first and second phase comparator signals to generate the tilt error signal (See col. 15, lines 37-64; Fig. 18, ref # 455)

Regarding claims 16 and 17, Ma et al. discloses wherein the signal processor further comprises a gain controller to amplify the detection signals from the inner sections by a predetermined gain factor, such that the amplified detection signals are summed with an unamplified one of the detection signals (See col. 15, lines 37-64; Fig. 18; ref # 456a, 456b)

Regarding claim 19 and 20, Ma et al. discloses wherein the phase comparison signal is used as a detrack signal indicating a degree of deviation of a light spot from a center of a track on the recording medium (See col. 14, line 66 to col. 15, line 36; col. 15, line 59-64)

Regarding claim 22, Ma et al. discloses a low pass filter at an output end of the signal processor, to low-pass-filter a received signal, so that a degree of relative tilting between the objective lens and the recording medium is detected regardless of tracking servo operation (See col. 11, lines 17-36; Figs. 17,18)

Regarding claim 23, Ma et al. discloses a detector at an output end of the signal processor, to detect an envelope of a signal output from the signal processor, corresponding to a relative tilt between the objective lens and the recording medium, or to detect variations of a middle level of the phase comparison signal, so that the tilt error signal is detected under no tracking servo operation. (See col. 11, lines 17-36)

Regarding claims 24 and 25, Ma et al. discloses a tracking error detector to detect a tracking error signal by comparing a phase of a sum signal of the detection signals from the inner and outer sections located in the first diagonal direction, with a phase of a sum signal of the detection signals from the inner and outer sections located in the second diagonal direction; and a differential part to subtract the tracking error signal output from the tracking error detector from the phase comparison signal, so that a detrack component is eliminated from the tilt error signal (See col. 14, line 66 to col. 15, line 36; col. 15, line 59-64; Figs. 17,18)

Regarding claim 27, Ma et al. discloses a gain controller between an output end of the tracking error detector or the signal processor, and an input end of the differential part (See col. 14, line 66 to col. 15, line 36; col. 15, line 59-64; Figs. 17,18; ref# 451)

Regarding claim 28, Ma et al. discloses wherein a width of each of the inner and outer sections is constant, or varies in the tangential direction. (See col. 8, lines 36-67)

Regarding claim 29, Ma et al. discloses wherein the inner sections of the photodetector receive 10-80% of 0th order diffracted light of the light incident from the objective lens (See col. 8, lines 36-67)

Regarding claim 30, Ma et al. discloses wherein the inner sections of the photodetector receive about 10-80% of 0th order diffracted light of the light incident from the objective lens (See col. 8, lines 36-67)

Regarding claim 31, Ma et al. discloses wherein four light receiving portions each including a pair of the inner and outer sections are separated from each other in the radial and/or tangential direction (See col. 8, lines 36-67; Figs. 33-36)

Regarding claim 32, Ma et al. discloses wherein the first through fourth light receiving portions are separated from each other in the radial and/or tangential direction (See col. 8, lines 36-67; Figs. 33-36)

Regarding claim 33, Ma et al. discloses wherein assuming that tilt error signal levels detected at $+1^0$ and -1^0 radial tilts with respect to a reference level are v1 and v2, respectively, the tilt error signal detected in an on-track state satisfies the maximum absolute value of (v1-v2)/(v1+v2) is 0.2 or less (See col. 27, lines 5-26)

Regarding claim 34, Ma et al. discloses wherein assuming that tilt error signal levels detected at +1.degree. and -1.degree. radial tilts with respect to a reference level are v3 and v3, respectively, the tilt error signal detected satisfies the minimum absolute value of v3 or v4 is about 50% of a tracking error signal level detected in an off-track state by phase comparison (See col. 27, lines 5-26)

Regarding claim 35, Ma et al. discloses an error signal detection apparatus for an optical recording/reproducing system (See Abstract), comprising:

an objective lens through which light passes (See col. 8, lines 21-35)

a first detector to detect the light incident from an objective lens, the first detector comprising a plurality of outer light portions and a plurality of inner light portions inside of the outer light portions (See col. 8, lines 21-45; Fig. 4,5, 18); and

a signal processor comprising a first comparing unit to compares a phase of a sum of detection signals from one of the outer light portions located in a first diagonal direction and from one of the inner light portions located in a second diagonal direction (See col. 15, lines 37-64; "a1, a2"; Fig. 18),

with a phase of a sum of detection signals from one of the outer light portions located arranged in the second diagonal direction and from an inner light portions located in the first diagonal direction (See col. 15, lines 37-64; "b1, b2"; Fig. 18),

to output a phase comparison signal, and the signal processor detects a tilt error signal from the first comparison signal (See col. 15, lines 59-64; Figs. 17,18)

Regarding claim 36, Ma et al. discloses wherein the signal processor further comprises a second comparing unit to compare a phase of a sum of detection signals from another one of the outer light portions located in a first diagonal direction and from another one of the inner light portions located in a second diagonal direction (See col. 15, lines 37-64; "c1, c2"; Fig. 18),

with a phase of a sum of detection signals from another one of the outer light portions located in second diagonal directions and from one of the inner light portions located in the first diagonal direction (See col. 15, lines 37-64; "d1, d2"; Fig. 18),

to output a second phase comparison signal, the signal processor further detecting the tilt error signal from the second comparison signal (See col. 15, lines 59-64; Figs. 17,18)

Regarding claim 37, Ma et al. discloses wherein the signal processor comprising an adding unit to add the first and the second phase comparison signals to generate the tilt error signal (See col. 15, lines 37-64; Fig. 18, ref # 455)

Regarding clam 38, Ma et al. discloses wherein the inner and outer light portions are located in a 2 x 4 matrix (See col. 15, lines 37-64; "c1, c2"; Fig. 18)

Regarding claim 39, Ma et al. discloses wherein the one of the outer light portions located in the first diagonal direction and the one of the inner light portions located in the second diagonal direction are located in a same row (See col. 15, lines 37-64; "a1, a2, b1, b2"; "c1, c2, d1, d2"; fig. 18)

Regarding claim 41, Ma et al. discloses a second detector to detect a tracking error signal from said first detector; and a subtracting unit to subtract the tracking error from the tilt error signal to generate the tilt error signal (See col. 14, line 66 to col. 15, line 36; col. 15, line 59-64; Figs. 17,18)

Regarding clam 42, Ma et al. discloses wherein the second detector detects the tracking error signal by comparing a phase of a sum of the inner light portions in the first diagonal direction and the outer light portions in the first diagonal direction with a phase of a sum of the inner light portions in the second diagonal direction and the outer light portions in the second diagonal directions (See col. 15, lines 37-64; Figs 17,18)

Regarding claims 44-46, Method claims 44 are drawn to the method of using the corresponding apparatus claimed in claims 35-37. Therefore method claims 44-46 correspond to apparatus claims 35-37 and are rejected for the same reasons of anticipation as used above.

6. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jorge L Ortiz-Criado whose telephone number is (703) 305-8323. The examiner can normally be reached on Mon.-Thu.(8:30 am - 6:00 pm),Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris H To can be reached on (703) 305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published.applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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